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SHUMAKER & SIEFFERT, P. A. 8425 SEASONS PARKWAY SUITE 105 ST. PAUL, MN 55125			PHAN, TRI H	
			ART UNIT	PAPER NUMBER
			2661	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,986

Applicant(s)

CALLON, ROSS

Examiner

Tri H. Phan

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-44 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44 is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-13,15-18 and 20-43 is/are rejected.
- 7) ☐ Claim(s) 6,14,19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment/Arguments

1. This Office Action is in response to the Response/Amendment filed on December 17th, 2004. Claims 2-3 are now canceled and new claims 39-44 are added. Claims 1 and 4-44 are now pending in the application.

Claim Objections

2. Claims 1, 13, 18 and 39 are objected to because of the following informalities:

In claim 1, line 5, the recitation "a computer network" should be correct to -- the computer network -- for clarity.

In claim 13, lines 2-3, the phrase "... the method further comprising and wherein forwarding the packet comprises ..." is unclear what it means. It should be rephrase for clarity.

In claim 18, line 5, the recitation "the link failure" should be correct to -- a link failure -- for clarity.

In claim 39, line 5, the recitation "a router" should be correct to -- the router-- for clarity.

Appropriate corrections are required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2661

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1, 5, 9, 27, 31-33 and 37-38 are rejected under 35 U.S.C. 102(e) as being anticipated by **Cain, Bradley** (U.S.6,697,325; hereinafter refer as '**Cain**').

- In regard to claim 1, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and system for expediting reconvergence in the communication network, which comprise *method for generating link failure information identifying the failed link* ('link fail'; For example see Fig.1; col. 4, lines 37-39; col. 4, line 64 through col. 5, line 20) *within the computer network* ('communication network') *and communicating the update message* ('LSA message'; For example see col. 1, lines 28-33) *to routers within the computer network in accordance with the routing protocol* ('link state routing protocol'; For example see col. 1, lines 20-27), *wherein the update message request withdrawal of one or more routes through the computer network that rely upon the failed link* (For example see col. 3, lines 50-57; col. 5, lines 21-25) *and incorporates the link failure information to identify the failed link* (For example see col. 1, line 66 through col. 2, line 52; col. 4, line 64 through col. 5, line 9).

- Regarding claim 5, in addition to features in base claim 1 (see rationales pertaining the rejection of base claim 1 discussed above), **Cain** further discloses about the method for *automatically deleting the link failure information upon expiration of the time period* ('predetermined period of time'; For example see col. 4, lines 37-39).

Art Unit: 2661

- In regard to claim 9, in addition to features in base claim 1 (see rationales pertaining the rejection of base claim 1 discussed above), **Cain** further discloses about the method for *detecting the failure of the link within the computer network* (For example see col. 4, line 64 through col. 5, line 16).

- Regarding claim 27, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and system for expediting reconvergence in the communication network, which comprise the *data store* ('cache') *to hold link failure information identifying failed links within the computer network* (For example see col. 4, lines 11-18; col. 5, lines 31-33), the *routing table* ('topology database') *to store routing information describing available routes to nodes within the computer network* (For example see col. 4, lines 49-63) and the *control unit* ('logic' in Fig.2) *to forward packets through the computer network based on the link failure information and the routing information* (For example see Fig. 2; col. 5, line 49 through col. 6, line 13).

- In regard to claims 31-33, in addition to features in base claim 27 (see rationales pertaining the rejection of base claim 27 discussed above), **Cain** further discloses about *the valid time period for the link failure information* ('timeout period'; For example see col. 2, lines 2-52), *timestamp indicating when the link failed* ('timer'; For example see col. 2, lines 2-52) and the *storage time period for the link failure information* ('predetermined period of time'; For example see col. 4, lines 37-39).

Art Unit: 2661

- Regarding claims 37-38, in addition to features in base claim 27 (see rationales pertaining the rejection of base claim 27 discussed above), Cain further discloses about *the database* ('topology database') *with routing table* ('communication links list'; For example see col. 4, lines 49-67).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 7-8, 10-13, 15, 18, 21-26, 30 and 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cain, Bradley** (U.S.6,697,325; hereinafter refer as '**Cain**') in view of **Agarwal et al.** (U.S.6,760,777; hereinafter refer as '**Agarwal**').

- In regard to claims 4, 7-8 and 28-29, **Cain** discloses all the subject matter of the claimed invention as discussed in part 4 above in this office action, including the use of various routing protocols to route the protocol messages (See col. 1, lines 13-19), but fails to explicitly disclose about the *Border Gateway Protocol 'BGP'*. However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol ("*path vector routing algorithm*") such as router-distributed Border Gateway Protocol 'rdBGP'

Art Unit: 2661

(“*routing data with BGP*”) for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP', and updating route information from other instances of received rdBGP information (“*generating update message*”) to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes (“For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal** in the **Cain's** routing protocol message, with the motivation being to provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

- Regarding claims 10-11, 23 and 26, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and computer readable medium (For example see Fig. 3; col. 6, lines 26-65) for expediting reconvergence in the communication network, which comprise the *method for receiving link failure information identifying the failed link* ('link fail'; For example see Fig.1; col. 4, lines 37-39; col. 5, line 21-48), *receiving packet identifying the destination within the computer network* (wherein it is obvious that the source and destination address in the packet's header are well known in the art, for example, IP packet with source and

Art Unit: 2661

destination address), *storing the link failure information* (For example see col. 4, lines 11-18) *and forwarding the link failure information* (For example see col. 4, lines 64-67) *within the computer network*. **Cain** fails to explicitly disclose about the “path vector routing protocol”. However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol (“*path vector routing protocol*”) such as router-distributed Border Gateway Protocol 'rdBGP' (“*routing data with BGP*”) for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP', and updating route information from other instances of received rdBGP information (“*generating update message*”) to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes (“For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal** in the **Cain's** routing protocol message, with the motivation being to provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

- In regard to claims 12, 24 and 30, in addition to features in base claims 10, 23 and 27 (see rationales pertaining the rejection of base claims 10, 23 and 27 discussed above), **Cain** further discloses about the *method for selecting the route defining the path to the destination based on the routing table* ('topology database'; For example see col. 4, lines 49-67) and *discarding the route when the path uses the failed link* (For example see col. 5, lines 21-25).

Agarwal also discloses about the routers forwarding data packets between sub networks based on routing table ("*routing table*"; For example see col. 1, lines 15-56) and about the rdBGP update and procedure for explicit route withdrawal based on route path attributes ("*discarding route based on failed link path*"; For example see col. 7, lines 1-10).

- Regarding claims 13, 15 and 25, in addition to features in base claims 10 and 23 (see rationales pertaining the rejection of base claims 10 and 23 discussed above), **Cain** further discloses about the *link failure information defines the valid time period for the information* ('predetermined period of time'; For example see col. 4, lines 37-39), *forwarding the packet according to the link failure information prior to the expiration of the valid time period* ('during timeout period'; For example see col. 2, lines 41-46) and *forwarding the packet without using the link failure information after the expiration of the valid time period* ('timer expires'; For example see col. 2, lines 47-52).

- In regard to claims 18 and 21-22, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and computer readable medium (For example see Fig. 3; col. 6, lines 26-65) for expediting reconvergence in the communication network, which

Art Unit: 2661

comprise the first data structure to store the identifier for the failed link within the computer environment ('cache'; For example see col. 4, lines 11-18), the second data structure to store the unique identifier for the originator of the link failure information ('topology database'; For example see col. 4, lines 49-67; it is obvious that the database has to store the MAC address or IP address of each node, e.g. "unique identifier", in order to recognize which node in the network), wherein the first data structure and the second data structure are stored within the routing table ('communication links list'; For example see col. 4, lines 49-67) and associated in a manner that cause a network router ('node') to output a routing communication to withdraw one or more routes and specify the failed link identified within the first data structure (For example see Figs. 1-2; col. 4, line 64 through col. 5, line 48) and without sending the routing communication (For example see col. 4, lines 64-67). **Cain** also discloses about the storage time for the link failure information ('predetermined period of time'; For example see col. 4, lines 37-39) and timestamp indicating when the link failed ('timer'; For example see col. 2, lines 20-25), but fails to explicitly disclose about "pair of Internet Protocol 'IP' addresses" and "fourth data structure to store security data for authenticating the originator". It is obvious that the source and destination IP addresses of each node are stored in order to provide the communication links between identifying nodes in the Internet network; and wherein the "security data for authenticating the originator" is just system engineering choices for creating data field in the topology database, for providing "secure" when communicating with other nodes in the other networks.

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to provide the "pair of Internet Protocol 'IP' addresses" and "security

Art Unit: 2661

data for authenticating the originator” into the combination of **Cain** and **Agarwal**, in order to provide “secure” while communicating with other nodes in the Internet network.

- Regarding claims 39 and 42, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and system for expediting reconvergence in the communication network, which comprise *receiving the message* (‘LSA protocol message’) *including link failure information identifying the failed link within the computer network* (‘link fail’; For example see Fig.1; col. 4, lines 37-39; col. 5, line 21-48), *wherein the link failure information defines the storage time period for which the link failure information is to be stored by the receiving router* (For example see col. 4, lines 37-39), *storing the link failure information within the router in accordance with the storage time period* (‘timer’; For example see col. 2, lines 20-34) *and forwarding the message only when the link failure information has not been previously received* (For example see col. 5, lines 34-48) *or selectively forwarding subsequently received messages that include the link failure information based on the expiration of the storage time period* (For example see col. 2, lines 35-52).

- In regard to claims 40-41 and 43, in addition to features in base claims 39 and 42 (see rationales pertaining the rejection of base claims 39 and 42 discussed above), **Cain** further discloses about the *selectively forwarding, which comprises receiving the second message* (‘subsequent LSA protocol message’) *with the link failure message identifying the failed link* (For example see col. 5, lines 34-48) *and forwarding the second message only if the storage time period for the link failure message has expired* (‘timeout’; For example see col. 2, lines 20-52)

Art Unit: 2661

and automatically deleting the link failure information upon expiration of the storage time period ('predetermined period of time'; For example see col. 4, lines 37-39). **Cain** also discloses wherein the failed link comprises the link coupling two of the node along the route ('communication link'; For example see col. 4, lines 50-67), but fails to explicitly disclose about the *identifies with source node, destination node and intermediate node*. However, it is obvious that the *identifies with source node, destination node and intermediate node* have to provide in order to communicate between nodes with the communication links.

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to provide the *identifies with source node, destination node and intermediate node* into the **Cain**'s topology database and communication links to communicate with other nodes in the network.

7. Claims 16-17 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cain, Bradley** (U.S.6,697,325; hereinafter refer as '**Cain**') in view of **Agarwal et al.** (U.S.6,760,777; hereinafter refer as '**Agarwal**'), further in view of **Hardjono** (U.S.6,425,004; hereinafter refer as '**Hardjono**').

- Regarding claims 16-17, the combination of **Agarwal** and **Cain**'s system discloses all the subject matter of the claimed invention as discussed in part 4 and 5 of this Office action above, about the method and system for expediting reconvergence in the communication network (**Cain**) and for distributing the path-vector routing protocol in establishing routing sessions within multiprocessor router and external protocol peers (**Agarwal**), but fails to

Art Unit: 2661

explicitly disclose the “*verifying and authenticating information originated from neighboring router*” the link failure information. However, such implementation is known in the art.

For example, **Hardjono** discloses in Figs. 1-10 and in the respective portions of the specification about the detecting and locating the misbehaving device in the network domain, through the use of the two-level authentication scheme to allow the receiving device to authenticate the originating sector for the packet and to secure the trusted authority between sectors (“*verifying and authenticating information originated from neighboring router*”; For example see Figs. 1, 7-10; col. 1, lines 48-63; col. 5, lines 40-60; col. 5, line 61 through col. 6, line 18).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Hardjono**, by implement the method for authenticating the originating sector for the packet and securing the trusted authority between sectors into the combination of **Agarwal** and **Cain's** system, with the motivation being to provide the secure and trusted authority between sectors, in which the misbehaving communication device is operated.

- Regarding claims 34-36, the combination of **Agarwal** and **Cain's** system further discloses about the local identification number for the link incident to the node (For example see **Cain**: col. 7, lines 14-22) and the redundant copy stored at the router/external routers (For example see **Agarwal**: col. 8, lines 12-14), but fails to explicitly disclose the “*security data for authenticating the originator*” of the link failure information. However, such implementation is known in the art.

For example, **Hardjono** discloses in Figs. 1-10 and in the respective portions of the specification about the detecting and locating the misbehaving device in the network domain, through the use of the two-level authentication scheme to allow the receiving device to authenticate the originating sector for the packet and to secure the trusted authority between sectors (“*verifying and authenticating information originated from neighboring router*”; For example see Figs. 1, 7-10; col. 1, lines 48-63; col. 5, lines 40-60; col. 5, line 61 through col. 6, line 18); wherein each router is associated with a unique router key (“*unique identifier*”; For example see col. 4, lines 20-35).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Hardjono**, by implement the method for authenticating the originating sector for the packet and securing the trusted authority between sectors into the combination of **Agarwal** and **Cain**'s system, with the motivation being to provide the secure and trusted authority between sectors, in which the misbehaving communication device is operated.

Response to Arguments

8. Applicant's arguments with respect to claims 1 and 4-38 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Art Unit: 2661

9. Claims 6, 14 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claim 44 is allowed. The following is an examiner's statement of reasons for allowance:

Claim 44 is considered allowable since when reading the claims in light of the specification, none of the references of record-alone or in combination disclose or suggest the combination of limitations specified in the independent claims including.

Substantially regarding claim 44, the prior art of record fails to disclose the method for routing the link failure information, wherein the link failure information defines the valid time period for the link failure information for forwarding the packet according to the path vector routing protocol using the link failure information prior to the expiration of the valid time period and forwarding the packet without using the link failure information after the expiration of the valid time period.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Art Unit: 2661

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cain et al. (U.S.6,757,289) and **Stone** (U.S.6,757,286) are all cited to show devices and methods for improving the network management in the telecommunication architectures, which are considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on (571) 272-3126.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306

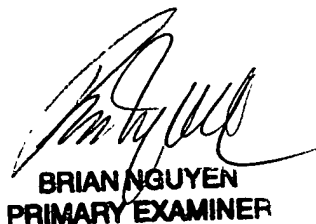
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor.

Art Unit: 2661

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (703) 305-3900.



Tri H. Phan
April 23, 2005



BRIAN NGUYEN
PRIMARY EXAMINER